

CLAIMS

1. A polished state monitoring apparatus for monitoring the progress of polish on a polished surface of an object to be polished by obtaining a characteristic value indicating the state of the polished surface at each sampling point every predetermined interval while scanning the surface and performing such an operation a plurality of times, said apparatus comprising:
- 10 a light emitting unit capable of emitting light for irradiating said surface; and
- a computing unit for controlling a sampling timing of said characteristic value and for receiving light reflected from said surface to generate said characteristic value;
- 15 wherein said computing unit monitors a time dependent variation of said characteristic value obtained from said sampling point at the same sampling timing during each scan.
2. A polished state monitoring apparatus according to claim 1, wherein said computing unit detects an end point of the polish in accordance with said characteristic value obtained from at least one pre-selected sampling point at said same sampling timing.
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3. A polished state monitoring apparatus according to claim 2, wherein said at least one pre-selected sampling point at said same sampling timing is a sampling point substantially corresponding to the center of said surface.
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4. A polished state monitoring apparatus according to claim 2, wherein said computing unit is operable to select

a plurality of different sampling points at said same sampling timings, monitor a time dependent variation of each sampling point, and detect the end point of the polish.

5 5. A polished state monitoring apparatus according to claim 4, wherein the polish is stopped when a specified number of sampling points among said different sampling points at said same sampling timings reach the end point of the polish.

10 6. A polished state monitoring apparatus according to any one of claims 1 to 5, wherein said computing unit is operable to output an average value of the characteristic values from a predetermined number of sampling points including one sampling point in the same scan and monitor a time dependent variation of said average value.

15 7. A polished state monitoring apparatus according to claim 1, wherein said computing unit is operable to output the average value of the characteristic values from a predetermined number of sampling points including one sampling point during each scan at the same sampling timing
20 of each scan and monitor a time dependent variation of said average value.

8. A polished apparatus comprising the polished state monitoring apparatus as claimed in any one of claims 1 to 7.

25 9. A polished state monitoring method for monitoring the progress of polish of a surface to be polished of an object by obtaining a characteristic value indicating a state of the surface at each sampling point every predetermined interval while scanning the surface, said method comprising

the steps of:

performing the scan a plurality of times; and
monitoring a time dependent variation of said
characteristic values obtained from said sampling points at
5 the same sampling timing during each scan.

10. A polished state monitoring method according to
claim 9, wherein at least one sampling point at said same
sampling timing of said scan is selected to detect an end
point of the polish.

11. A polished state monitoring method according to
claim 10, wherein said at least one selected sampling point
at said same sampling timing is a sampling point
substantially corresponding to the center of said surface.

12. A polished state monitoring method according to
15 claim 9, wherein a plurality of different sampling points
at said same sampling timings are selected to monitor a
time dependent variation of each sampling point and detect
the end point of the polish.

13. A polished state monitoring method according to
20 claim 12, wherein the polish is stopped when a specified
number of sampling points among the different sampling
points at said same sampling timings reach the end point of
the polish.

14. A polished state monitoring method according to any
25 one of claims 9 to 13, wherein an average value of the
characteristic values from a predetermined number of
sampling points including one sampling point in the same
scan is outputted to monitor a time dependent variation of

said average value.

15. A polished state monitoring method according to claim 9, wherein the average value of the characteristic values from a predetermined number of sampling points including one sampling point during each scan at the same sampling timing of said scan is outputted to monitor a time dependent variation of said average value.

16. A polishing method for executing a polished state monitoring method as claimed in any one of claims 9 to 15.